Chapter 29: Sequencing

29.1 Introduction

Sequencing refers to the order in which proposed transportation modes are constructed (usually transit versus new roads). For the Mountain View Corridor (MVC) project, the sequencing analysis evaluates a scenario in which a transit alternative is constructed before a freeway alternative to determine whether a transit-first scenario could relieve enough congestion to delay the need for construction of the MVC freeway. This sequencing analysis evaluates constructing the Preferred Transit Alternative before the Preferred Freeway Alternative in Salt Lake County (see Section 2.4.5, Preferred Alternatives, in Chapter 2) and the associated land-use and transportation impacts of this scenario. Specifically, the analysis focuses on an evaluation of alternative timing, or sequencing, of the transit and highway alternatives.

29.1.1 Sequencing Background

As part of the MVC project, Envision Utah facilitated a process referred to as the Growth Choices Study (see Chapter 3, Growth Choices). During the Growth Choices process, the participants discussed the sequencing of transit and roadway improvements and included a statement about sequencing in the Mountain View Vision Voluntary Agreement. The fourth Principle of Agreement states:

> The phasing and implementation of transportation investments over the next decade will affect land-use development patterns, future travel needs, and the availability and effectiveness of other viable transportation choices. The sequencing of transportation investments should be studied to recommend the most cost-efficient way to meet future travel needs, reduce the rate of growth of vehicle-miles traveled, and improve air quality.

To address this Principle of Agreement, the MVC Environmental Impact Statement (EIS) team initiated the sequencing analysis discussed in this chapter.

During the Growth Choices process, three scenarios for transportation and growth were developed: Trend, Expansive, and Compact. The Trend Scenario illustrates what growth and transportation might look like in 2030 if recent land development patterns continue and existing transportation plans are implemented. The Expansive Scenario reflects more-dispersed development patterns and a greater investment in new roadway infrastructure. The Compact Scenario reflects more-dense development patterns and a greater investment in new transit infrastructure and service.

After reviewing the three scenarios, the Growth Choices Stakeholder Committee (representatives from Salt Lake and Utah Counties, 14 cities, four nongovernmental organizations, a school district, two chambers of commerce, and five landowners in the study area) decided to create a composite scenario that blended some ideas from the Compact and Trend Scenarios. This composite scenario was called the "Vision" Scenario. This scenario includes a balanced mix of roadway improvements, transit improvements, and land-use changes that focused development to support transit use along 5600 West.

29.1.2 Objective of the Sequencing Analysis

This chapter examines the transportation impacts of delaying construction of the Preferred Roadway Alternative until after the Preferred Transit Alternative is constructed and allowed to develop a transit ridership base. Specifically, the analysis examines the effects of a transit-first scenario on land use, transit use, and traffic delay and congestion in the MVC study area. These three issues relate to the two main objectives of the MVC project, which are to improve regional mobility by reducing roadway congestion and to improve regional mobility by supporting increased transit availability (see Section 1.3.1, Purpose of the Project).

29.2 Sequencing Analysis

The sequencing analysis used both qualitative and quantitative approaches. The qualitative approach gathered information about changes in land-use patterns due to different sequencing scenarios through interviews with representatives from the cities and counties in the MVC study area. The quantitative approach evaluated different sequencing scenarios using the regional travel demand model from the Wasatch Front Regional Council (WFRC) and the Mountainland Association of Governments (MAG) to provide a numeric analysis of the effects of sequencing.

29.2.1 Qualitative, Interview-Based Approach

The qualitative approach gathered information about sequencing from the affected jurisdictions in the MVC study area as well as local developers who have developed projects in the Wasatch Front area. The interviews consisted of asking interviewees how the area would develop differently if transit were implemented first and whether more transit-oriented developments would be built along the proposed transit alternative.

29.2.1.1 Qualitative Analysis Methodology

The qualitative approach involved interviewing 15 municipalities in the MVC study area and 13 developers who own land in the MVC study area. Each person interviewed was asked about the land-use impacts associated with constructing the Preferred Transit Alternative before the Preferred Freeway Alternative. Municipal staff were interviewed because municipalities control local land-use plans and approve developments. Developers were interviewed because they request land-use changes, build developments, and are more aware of market demands.

Some of the information in the sequencing analysis is also discussed in Chapter 24, Indirect Effects. The two chapters are similar in that both evaluate impacts to land uses. The interviews for both chapters were conducted concurrently.

Table 29.2-1 and Table 29.2-2 below list the municipalities and developers that were interviewed during this process.

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Table 29.2-1. Municipality Interviews

Municipality	Date	Persons Interviewed
Salt Lake County	1/14/05	David White (County Planner), Andrea Pullos (County Transportation Manager), Jena Walker (County Transportation Engineer)
Salt Lake City	1/11/05	D.J. Baxter (Mayor's Office), Doug Wheelwright (City Planner), Kevin Young (Transportation Engineer)
West Valley City	1/20/05	Joseph Moore (Community Economic Development Director), Jeff Hawker (Planner), Kevin Hooper (Planner), John Janson (Planner), Bob Buchanon (Economic Development)
City of West Jordan	1/11/05	David Murphy (Capitol Facilities Manager), Bill Baranowski (Traffic Engineer), Rick Lewis (City Planner), Tom Burdett (Community Development Director)
City of South Jordan	1/12/05	Greg Schindler (City Planner), Shane Greenwood (City Engineer), Don Bruey (City Public Services), Cliff Strachen (City Public Services Engineer)
Riverton City	1/13//05	Frederick Lutze (City Engineer), Mike Hutchinson (Public Works Director), Brian Maxfield (City Planner)
City of Herriman	1/12/05	Glenn Graham (City Planner)
City of Bluffdale	1/13/05	Shane Jones (City Engineer), Blaine Gehring (City Planner), Brent Bluth (City Administrator)
Utah County	1/10/05	Paul Hawker (Associate County Engineer), Clyde Naylor (County Engineer), John McMullin (Engineering Manager), Michael Leifson (Engineering Technician), Bryce Armstrong (County Planner)
Lehi City	1/25/05	Loren Powell (City Engineer), Diana Webb (City Planner)
City of Saratoga Springs	1/18/05	Larry Gilson (City Engineer), Justin Jones (Gilson Engineering), Mark Edwards (Public Works Director), Dave Anderson (Planner), Ken Leetham (City Administrator)
City of Eagle Mountain	1/18/05	Kelvin Bailey (Mayor), Chris Hillman (City Administrator), Mark Sovine (Public Works Director), Chris Trusty (City Engineer), Mike Jensen (Epic Engineering), Shawn Warnke (Planner), Adam Lenhard (Planner), Jeff Weber (Public Works)
City of American Fork	1/19/05	Howard Denny (Public Works Director), J.H. Hadfield (Engineer), Wendelin Knobloch (Planner), Rod Despain (Planning Director)
City of Pleasant Grove	1/20/05	Frank Mills (City Administrator), Gary Fry (Planner)
City of Lindon	1/13/05	Kevin Smith (City Planner), Mark Christensen (JUB Engineers)

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Table 29.2-2. Developer Interviews

Development	Date	Location	Company and Persons Interviewed
Daybreak	2/23/05	11400 South and Bangerter Highway, South Jordan	Kennecott Land – Jim Schulte (Planning Manager), Vicki Varella (Vice President)
Independence at Bluffdale	2/24/05	14600 South and I-15, Bluffdale	IBI Group – Ray Whitchurch (Planner)
Thanksgiving Point	2/24/05	West SR 92 and I-15, Lehi	Thanksgiving Point – Greg Gagon (Development Director)
Rosecrest	2/22/05	West 12600 South, Bluffdale/ Herriman	Sorenson Development – Mike Bradshaw (Vice President)
Mosida Orchards	2/23/05	West Utah Lake, Utah County	Gardner and Associates – Dave Gardner (President)
Eagle Mountain Properties	2/23/05	Eagle Mountain	Eagle Mountain Properties – John Walton (President), Eric Jones (Attorney)
Peterson Development	2/23/05	West Jordan	Peterson Development
The Ranches	2/22/05	Eagle Mountain	Eagle Mountain Links – Monte Kingston (Planning)
Patterson Construction	2/22/05	Eagle Mountain	Patterson Construction – Wayne Patterson (Planning)
Ivory Homes	2/22/05	West Valley City and Lehi	Ivory Homes – Colin Wright (Planning)
Traverse Mountain	2/24/05	East SR 92 and I-15, Lehi	Mountain Home Development Group – McKay Christensen (Planning), Tyson Thorpe (Planning), Mark Walker (Vice President)
Station Park	2/24/05	Farmington, Davis County	Stonehenge Development – Michael Haws (Coldwell Banker), John Shirley (Architect)
Property Reserve Inc.	2/22/05	Salt Lake and Utah Counties	PRI – Richard Wangsgard (Real Estate), Glen Girsberger (Real Estate)

29.2.1.2 Qualitative Analysis Results

Municipalities

Most of the municipal representatives interviewed said that, in general, their municipalities would not make land-use decisions based on the timing of the MVC alternatives, but instead would make decisions based on previously adopted land-use plans and political agendas. Most representatives stated that, if the transit alternative is constructed first, their municipality is likely to change the land uses around the transit line to commercial or industrial (to create economic support) or higher-density residential (to increase transit ridership). However, the representatives did not expect land uses to be changed throughout their entire municipality. In other words, if municipalities increase densities around the transit alternative and the transit-oriented development land uses are allowed to establish without competition from the MVC freeway alternative, the developable areas located away from the transit line will continue to develop out

as currently planned because the population and employment projections are large.

Salt Lake City. The representatives from Salt Lake City said that constructing the MVC transit alternative first was crucial to minimize sprawl on the west side of the Salt Lake Valley and to establish the ridership that would support the transit alternative. Salt Lake City is concerned that building the MVC freeway will hinder use of the MVC transit alternative. The city said that, if the MVC freeway is constructed before the MVC transit alternative, the transit line would be unable to sustain itself. Development would occur near the freeway and other areas away from the transit line, so transit-oriented developments would never be able to take hold. Salt Lake City wants the transit line to establish itself and let the land uses develop around the transit system. Salt Lake City wants transit-dependent communities that minimize reliance on the automobile. The City is considering having transit-oriented light industrial/manufacturing land uses along the transit alternative between State Route (SR 201) and Interstate 80 (I-80) (Parsons Brinckerhoff 2005a).

West Valley City. West Valley City stated that both the freeway and the transit line are needed. With regard to the order of constructing these facilities, the City said that, if the transit line is constructed first, it would need to be more aggressive and move greater volumes of people to compensate for not having the MVC freeway. The city representatives said that West Valley City would change the land uses around the transit alternative to allow transit-oriented developments. They also stated that, if the transit alternative is constructed first, land uses and development densities away from the transit alternative would not change (Parsons Brinckerhoff 2005a).

West Jordan, South Jordan, and Riverton. Representatives from West Jordan, South Jordan, and Riverton said that, if the transit alternative is constructed first, their municipalities might change land uses around the transit line, but large-scale land-use changes away from the transit line are not expected. Areas away from the transit line are expected to develop as traditional, low-density residential and neighborhood commercial nodes (Parsons Brinckerhoff 2005a).

Before the transit alternative would be constructed, the Mid-Jordan light-rail transit line (a separate project) is proposed to be constructed. Because this transit line would provide a shorter travel time to downtown Salt Lake City, it is likely to be the primary transit line for West Jordan, South Jordan, and Riverton riders. Both West Jordan and South Jordan already have plans for transit-oriented developments along the Mid-Jordan light-rail transit line. These municipalities currently do not have plans for transit-oriented developments along the proposed MVC transit alternative. Representatives from West Jordan said that the City

would consider adopting a transit-oriented development plan for the MVC transit alternative after evaluating the performance of the transit-oriented developments along the Mid-Jordan light-rail transit line. The West Jordan representatives said that they would possibly consider a 24 unit/acre transit-oriented development along the proposed MVC transit alternative (Parsons Brinckerhoff 2005a).

Herriman and Bluffdale. Representatives from Herriman and Bluffdale said that the overall development patterns and land uses in Herriman and Bluffdale are not expected to change if the transit alternative is constructed first. If the transit alternative is extended in Herriman, the City might consider a transit-oriented development around the transit stop. Land uses away from the transit line would not change as a result of constructing the transit line before the MVC freeway. The city representatives said that, even if the transit alternative is constructed first, the City will continue to develop plans around the MVC freeway. Due to political reasons, Bluffdale wants to remain rural and plans to accomplish this by maintaining the historical lot size of at least 1 acre in the city. Land uses in the city are not expected to change, since the transit alternative does not extend into Bluffdale (Parsons Brinckerhoff 2005a).

Lehi, Saratoga Springs, Eagle Mountain, American Fork, and Lindon. Representatives from Lehi, Saratoga Springs, Eagle Mountain, American Fork, and Lindon in Utah County said that, if the transit alternative is constructed first, this would not change any land-use plans or development patterns. The transit alternative would not extend into Utah County (Parsons Brinckerhoff 2005a).

Developers

Most developers and landowners who were interviewed said that their development plans did not depend on the timing of constructing the transit alternative. Their plans were mostly dependent on the housing market and the surrounding municipality's general land-use plans. Developers said that the freeway alternative was long overdue and was needed to address existing and future growth regardless of whether the transit alternative is built before the freeway alternative.

Kennecott Land Company. Kennecott Land Company is the largest developer in the MVC study area. Kennecott Land's holdings include over 90,000 acres of the western Salt Lake Valley. Kennecott Land is currently working to develop 4,000 acres in South Jordan as a development called Daybreak. This development will be served by both the MVC freeway and transit alternatives and the Mid-Jordan light-rail transit line (a separate project). Daybreak is a New Urbanism development that focuses land-use planning around the Mid-Jordan transit line and the MVC transit alternative. Representatives from Kennecott Land said that,

since transit-oriented planning has always been part of their development process, constructing the transit alternative before the freeway alternative is not likely to substantially change Daybreak's development densities or Kennecott Land's land-planning decisions. The representatives said that the proposed 13,000 housing units in Daybreak would likely be constructed regardless of when the transit alternative is constructed. One change that might occur would involve the construction of the 9 million square feet of commercial space. The representatives said that constructing the transit alternative first might result in less commercial area. The commercial area that was planned with the MVC freeway alternative would most likely be rezoned to residential (Parsons Brinckerhoff 2005b).

Sorenson Development Company. Another major development in the MVC study area is the Rosecrest development by Sorenson Development Company. Rosecrest is approximately 2,300 acres and is partially located in Herriman and partially in Bluffdale. The Preferred Freeway Alternative alignment bisects the development. The transit alternative would not be located on the Rosecrest development. Representatives from Sorenson Development Company said that constructing the transit alternative first could delay the proposed commercial densities adjacent to the proposed MVC freeway interchanges. The residential densities for the remaining development areas are not likely to change, since half of the development is already built out and the development pressure for the housing is high in the area (Parsons Brinckerhoff 2005b).

IBI Group. The Independence development in Bluffdale is a separate development from Rosecrest that is proposed by another private developer and IBI Group. The development, which encompasses 580 acres, is located south of the Utah State Prison and next to I-15. Representatives from IBI Group said that the Independence development plans would not change if the transit alternative is constructed before the freeway alternative. IBI Group's development plans are based on access to I-15 and the potential commuter rail along I-15 (a separate project from the MVC) and on market trends. Representatives from IBI Group said that the current market trends are for larger-lot, single-family, detached developments. The IBI Group representatives said, as did other developers, that market trends might change in the future to smaller-lot, higher-density developments. These development changes could be due to population growth, increased property values, and changing market pressures in the MVC study area over the next 30 years (Parsons Brinckerhoff 2005b).

Mountain Home Development Group. Farther south from the Independence development and on the east side of I-15 is the Traverse Mountain development. Traverse Mountain is similar to the Independence development in that the development plans are based on access to I-15 or the commuter rail project along

I-15 (a separate project from the MVC). The developer said that their development plans will not change if the transit alternative is constructed before the freeway alternative (Parsons Brinckerhoff 2005b).

Other Developers. Developments in Lehi, Eagle Mountain, and Saratoga Springs will not change if the transit alternative is constructed before the freeway alternative, according to developers in these cities (Parsons Brinckerhoff 2005b). For example, representatives from Eagle Mountain Links LLC in Eagle Mountain said that their development decisions are not based on the MVC alternatives but instead on market trends.

29.2.2 Quantitative, Numbers-Based Approach

The quantitative approach involved using the WFRC/MAG regional travel demand model to quantitatively measure the effects of different sequencing scenarios. Two scenarios were evaluated based on forecast years of 2015 and 2030. For each scenario, the following data were calculated for 2015 and 2030:

- Regional person-trips by purpose and mode
- Number of daily transit trips with one or both ends in the MVC study area
- Daily boardings for the 5600 West Transit Alternative, Dedicated Right-of-Way Transit Option (see Section 2.2.2.1, 5600 West Transit Alternative)
- Peak-period transit share for trips with one or both ends in the MVC study area
- Peak-hour transit share for trips with one or both ends in the MVC study area
- Daily highway system vehicle-miles traveled (VMT) in the MVC study area and in the region. Note that air emissions generated by vehicles can be correlated to VMT. Generally, higher VMT results in overall greater vehicle emissions.
- Daily highway system hours of delay in the MVC study area

The scenarios are discussed below and are shown in Figure 29-1 through Figure 29-5, Sequencing Analysis.

29.2.2.1 Quantitative Scenarios Evaluated – Forecast Year 2015

Scenario 1 – No-Action

Purpose. The 2015 No-Action scenario serves as a baseline for comparing the other sequencing scenarios. For this scenario, the MVC EIS team assumed that past development trends in the MVC study area would continue and that neither an MVC roadway nor a transit alternative would be operational before 2015.

Approach. For socioeconomic data, the 2015 WFRC/MAG forecast households and employment data were used for all transportation analysis zones. The roadway network used for the No-Action scenario included all elements in the WFRC long-range transportation plan without the MVC roadway and transit alternatives.

Transportation System Management (TSM) and Transportation Demand Management (TDM) measures are already accounted for in the No-Action Alternative and in the scenarios below because they are in WFRC's and MAG's 2030 long-range transportation plans and travel demand model.

Scenario 2 – Transit-First Scenario with Growth Choices Land Use Proportionate throughout the MVC Study Area

Purpose. Under this scenario, the Dedicated Right-of-Way Transit Option would be opened before 2015, and the land uses developed under the Growth Choices process would be implemented. With this scenario, the development and growth pattern is distributed throughout the MVC study area and is not concentrated along the proposed 5600 West transit corridor.

Approach. For socioeconomic data, the MVC EIS team calculated the amount of growth in households and employment projected for transportation analysis zones in the MVC study area during the period from 2005 to 2015. This growth was then allocated to the MVC study area transportation analysis zones in proportion to their forecasted growth from 2005 to the 2030 Growth Choices level of development. For the remainder of the region, the 2015 WFRC/MAG forecast households and employment data were used.

This scenario includes implementing the Dedicated Right-of-Way Transit Option before 2015 along with the elements in the WFRC/MAG long-range plan minus an MVC roadway alternative.

Scenario 3 – Transit-First Scenario with Growth Choices Land Use Concentrated along 5600 West

Purpose. Under this scenario, the Dedicated Right-of-Way Transit Option would be opened before 2015, and the land uses developed under the Growth Choices process would be implemented. With this scenario, the development and growth pattern is concentrated along the 5600 West corridor.

Approach. For socioeconomic data, the MVC EIS team calculated the amount of growth in households and employment projected for transportation analysis zones in the MVC study area during the period from 2005 to 2015. The area adjacent to the Dedicated Right-of-Way Transit Option would grow according to the 2030 Growth Choices household and employment levels. This level of growth was taken from the overall MVC study area projections. The remainder of the household and employment levels not allocated to Growth Choices land uses along 5600 West was allocated to the MVC study area outside the 5600 West corridor. For this area outside the 5600 West corridor, the growth rates identified in the 2015 WFRC/MAG forecast were used.

This scenario includes implementing the Dedicated Right-of-Way Transit Option before 2015 along with the elements in the WFRC/MAG long-range plan minus an MVC roadway alternative.

Scenario 4 – Transit-First Scenario with Growth Choices Land Use Concentrated along 5600 West and a Non-tolled MVC Roadway

2015 Scenario 4 would be the same as 2015 Scenario 3 except that the non-tolled MVC freeway components would be implemented.

Scenario 5 – Transit-First Scenario with Growth Choices Land Use Concentrated along 5600 West and a Tolled MVC Roadway

2015 Scenario 5 would be the same as 2015 Scenario 3 except that the tolled MVC freeway components would be implemented.

29.2.2.2 Quantitative Analysis Results – Forecast Year 2015

Table 29.2-3 below provides a summary of the daily regional trips by purpose (home, work, or college) and mode (non-motorized, auto, or transit) for each of the five scenarios evaluated in the 2015 sequencing analysis. The results were developed using the WFRC/MAG regional travel demand model. The data show that there is less than a 1% difference in regional transit trips between building transit in 2015 without an MVC roadway compared to building transit in 2015 with an MVC roadway (either tolled or non-tolled).

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Table 29.2-3. 2015 Daily Regional Trips by Purpose and Mode

Travel Mode	Home-Based Work	Home-Based College	Home-Based Other	Non-Home-Based	Total	Percent over No-Action
Scenario 1 – No-Action						
Non-motorized	31,550	18,520	643,840	167,330	861,240	
Auto	1,257,670	104,490	4,611,470	2,969,880	8,943,510	NA
Transit	70,110	29,320	38,47	21,730	159,630	NA
Total	1,359,330	152,330	5,293,780	3,158,940	9,964,380	
Scenario 2 – Transit-First Scenario with Growth Choices Land Use Proportionate throughout the MVC Study Area						
Non-motorized	31,330	18,570	640,300	166,350	856,550	
Auto	1,258,880	104,320	4,627,120	2,975,190	8,965,510	0.3%
Transit	70,960	29,440	38,750	21,960	161,110	0.9%
Total	1,361,170	152,330	5,306,170	3,163,500	9,983,170	
Scenario 3 – Transit-First Scenario with Growth Choices Land Use Concentrated along 5600 West						
Non-motorized	31,850	18,510	644,490	167,310	861,980	
Auto	1,256,340	104,310	4,618,220	2,972,210	8,951,080	0.01%
Transit	71,830	29,510	39,240	22,080	162,660	1.9%
Total	1,360,020	152,330	5,301,950	3,161,420	9,975,720	
Scenario 4 – Transit-First Scenario with Growth Choices Land Use Concentrated along 5600 West and a Non-tolled MVC Roadway						
Non-motorized	31,740	18,480	635,110	164,750	850,080	
Auto	1,256,980	104,500	4,627,310	2,974,400	8,963,190	0.2%
Transit	71,300	29,350	39,440	22,130	162,220	1.6%
Total	1,360,020	152,330	5,301,860	3,161,280	9,975,490	
Scenario 5 – Transit-First Scenario with Growth Choices Land Use Concentrated along 5600 West and a Tolled MVC Roadway						
Non-motorized	31,640	18,470	644,190	166,130	856,430	
Auto	1,257,480	104,620	4,622,530	2,973,210	8,957,840	0.2%
Transit	70,890	29,240	39,180	22,030	161,340	1.1%
Total	1,360,010	152,330	5,301,900	3,161,370	9,975,610	

NA = not applicable

This table shows daily regional trips within the WFRC and MAG planning area.

Shaded cells highlight the expected auto and transit trips under the various sequencing scenarios. The shaded percentages indicate the percentage increase in auto and transit trips compared to the No-Action scenario.

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The data show that, with an MVC toll roadway, about 880 additional transit trips per day would be generated compared to a non-tolled roadway, which is still less than 1% of the total transit trips. In addition, the best-performing transit-only scenario (Scenario 3) would generate 1.9% more transit trips than the No-Action scenario (Scenario 1), compared to 1.6% more transit trips for the scenario that includes both the Dedicated Right-of-Way Transit Option and a non-tolled MVC roadway (Scenario 4).

Table 29.2-4 provides the results for the number of transit trips, transit boardings, transit share, roadway VMT, and delay results in the MVC study area. This table shows that the most important factor in determining transit use is land use, not whether the MVC freeway (either tolled or non-tolled) is built first. This is demonstrated by the lower transit use in Scenario 2 compared to the other action scenarios (3, 4, and 5), all of which include transit-oriented development concentrated along 5600 West.

When transit-oriented land use is concentrated along 5600 West, there is little difference in transit use (about 2% to 5%) whether the MVC freeway is operating at the same time as or after the transit line. However, the number of transit trips would still be about 10% to 14% more than if no transit line were constructed. In addition, the transit-only scenarios resulted in substantially greater roadway delay (about 65% for the non-tolled roadway and 17% for the tolled roadway) compared to the scenarios in which the roadway and transit were operating at the same time in 2015.

Table 29.2-4. 2015 Sequencing Scenario Transit Trips, Transit Boardings, Transit Share, VMT, and Delay Results in the MVC Study Area

Evaluation Method	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
2015 daily transit trips[a]	16,540	17,770	19,190	18,910	18,310
2015 daily transit boardings	570[b]	3,760[c]	5,010[c]	4,780[c]	4,540[c]
2015 peak-period transit share[a]	1.12%	1.19%	1.28%	1.24%	1.21%
2015 peak-hour transit share[a]	1.52%	1.61%	1.74%	1.68%	1.64%
2015 daily highway VMT in the MVC study area	9,870,400	10,168,400	9,944,000	11,426,900	9,857,100
2015 daily highway system hours of delay in the MVC study area	37,750	38,740	40,840	24,720	34,810

[a] Transit trips with one or both ends in the MVC study area

[b] 5600 West bus route

[c] 5600 West Transit Alternative with Dedicated Right-of-Way Transit Option

29.2.2.3 Quantitative Scenarios Evaluated – Forecast Year 2030

For the evaluation of sequencing in 2030, a range of seven scenarios was analyzed that included transit only and a combination of transit and roadway. For each of the action scenarios (2 through 7), two different land-use scenarios were used from the Growth Choices process: the Vision Scenario and the Compact Scenario. The Vision Scenario was the agreed-to outcome of the Growth Choices process by the Stakeholder Committee, and the Compact Scenario was eliminated by the committee because the denser development patterns under this scenario did not fit with long-term planning in the study area. Although the Compact Scenario was eliminated, it is included in this analysis to enable a comparison to the less-compact land uses in the Vision Scenario. Figure 29-6, Sequencing Analysis – 2030 Population Change – 2005 Based "Compact" Scenario, and Figure 29-7, Sequencing Analysis – 2030 Employment Change – 2005 Based "Compact" Scenario, show the population and employment assumptions used to develop the Compact Scenario.

Scenario 1 – No-Action

Purpose. The No-Action scenario serves as a baseline for comparing the other sequencing scenarios. For this scenario, the MVC EIS team assumed that past development trends in the MVC study area would continue and that neither an MVC roadway nor a transit alternative would be operating before 2030. This scenario corresponds to 2015 Scenario 1.

Approach. For socioeconomic data, the household and employment data from the 2030 WFRC/MAG forecast were used for all transportation analysis zones. The roadway network used for the 2030 No-Action scenario included all elements in the WFRC/MAG long-range transportation plan without the MVC roadway and transit alternatives.

Scenario 2 – MVC Transit with Growth Choices Land Use with No Roadway Alternatives

Purpose. Under this scenario, the Dedicated Right-of-Way Transit Option would be operating before 2030, and the land uses developed under the Growth Choices process would be implemented. With this scenario, the development and growth pattern is distributed throughout the MVC study area and is not concentrated along the proposed 5600 West transit corridor. This scenario corresponds to 2015 Scenario 2.

Approach. For socioeconomic data, the 2030 Growth Choices level of development in the MVC study area was used. For the region outside the MVC study area, the household and employment data from the 2030 WFRC/MAG

forecast were used. This scenario includes implementing the Dedicated Right-of-Way Transit Option before 2030 along with the elements in the WFRC/MAG long-range plan without an MVC roadway alternative.

Scenario 3 – MVC Transit with Growth Choices Land Use with MVC Roadway Alternative Non-tolled

Purpose. Under this scenario, the Dedicated Right-of-Way Transit Option along with MVC roadway alternative would be opened before 2030, and the land uses developed under the Growth Choices process would be implemented. This scenario does not correspond to any 2015 scenarios.

Approach. For socioeconomic data, the 2030 Growth Choices level of development in the MVC study area was used. For the region outside the MVC study area, the household and employment data from the 2030 WFRC/MAG forecast were used. This scenario includes implementing an MVC roadway alternative along with a Dedicated Right-of-Way Transit Option before 2030 along with the elements in the WFRC/MAG long-range plan.

Scenario 4 – MVC Transit with Growth Choices Land Use with MVC Roadway Alternative with Tolling Option

2030 Scenario 4 would be the same as 2030 Scenario 3 except that the MVC freeway components would be tolled.

Scenario 5 – MVC Transit with Compact Growth Land Use with No Roadway Alternatives

Purpose. Under this scenario, the Dedicated Right-of-Way Transit Option would be operating before 2030, and land uses would be developed that would follow a compact growth pattern concentrated along 5600 West to support transit use. There would be no MVC roadway alternatives implemented with Scenario 5. This scenario corresponds to 2015 Scenario 3.

Approach. For socioeconomic data, the amount of growth in households and employment that is projected for traffic analysis zones in the MVC study area from 2005 to 2030 was calculated. These data were applied to the traffic analysis zones adjacent to the 5600 West transit line so that development would grow beyond that predicted for the 2030 Growth Choices level of development (households and employment) to something that better reflected the Compact Scenario developed during the Growth Choices phase. Finally, the remainder of the household and employment growth projected for the MVC study area was allocated to those MVC study area traffic analysis zones that are not adjacent to the 5600 West transit line in proportion to their forecasted growth from 2005 to

2030. For the remainder of the region, the household and employment data from the 2030 WFRC/MAG forecast were used.

Scenario 6 – MVC Transit with Compact Growth Land Use with MVC Roadway Alternative Non-tolled

2030 Scenario 6 is the same as 2030 Scenario 5 except that it would include implementing an MVC roadway non-tolled alternative prior to 2030.

Scenario 7 – MVC Transit with Compact Growth Land Use with MVC Roadway Alternative with Tolling Option

2030 Scenario 7 is the same as 2030 Scenario 5 except that it would include implementing an MVC roadway tolled alternative prior to 2030.

29.2.2.4 Quantitative Analysis Results – Forecast Year 2030

Table 29.2-5 below provides a summary of the daily regional trips by purpose (home, work, or college) and mode (non-motorized, auto, or transit) for each of the seven scenarios evaluated in the 2030 sequencing analysis. The results were developed using the WFRC/MAG regional travel demand model.

The data show that 2030 Scenario 5, MVC Transit with Compact Land Use with No Roadway Alternatives, would result in the most transit trips with an increase of 4.5% over the 2030 No-Action Scenario (2030 Scenario 1). 2030 Scenario 5 would result in 1,737 additional daily transit trips in the region compared to 2030 Scenario 6, which includes implementation of the MVC roadway alternatives in addition to compact land uses along 5600 West to support transit use. 2030 Scenario 5 would result in 5,214 additional daily transit trips compared to 2030 Scenario 3 (MVC Transit with Growth Choices Land Use with MVC Roadway Alternative Non-tolled). The 2030 action scenarios tested resulted in an increased use of daily transit trips of 1.8% to 4.5% over the 2030 No-Action Scenario.

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Table 29.2-5. 2030 Daily Regional Trips by Purpose and Mode

Travel Mode	Home-Based Work	Home-Based College	Home-Based Other	Non-Home-Based	Total	Percent over No-Action
Scenario 1 – No-Action						
Non-motorized	38,163	21,548	768,726	199,387	1,027,824	
Auto	1,596,801	132,443	5,732,236	3,741,306	11,202,786	NA
Transit	84,546	38,473	47,352	24,713	195,084	NA
Total	1,719,510	192,464	6,548,314	3,965,406	12,425,694	
Scenario 2 – MVC Transit with Growth Choices Land Use with No Roadway Alternatives						
Non-motorized	38,495	21,588	769,789	199,999	1,029,871	
Auto	1,594,068	132,024	5,736,537	3,742,541	11,205,170	0.02%
Transit	87,659	38,852	48,802	25,338	200,651	2.9%
Total	1,720,222	192,464	6,555,128	3,967,878	12,435,692	
Scenario 3 – MVC Transit with Growth Choices Land Use with MVC Roadway Alternative Non-tolled						
Non-motorized	38,130	21,568	750,145	195,268	1,005,111	
Auto	1,581,648	132,379	5,755,440	3,746,905	11,216,372	0.1%
Transit	85,748	38,517	49,100	25,296	198,661	1.8%
Total	1,705,526	192,464	6,554,685	3,967,469	12,420,144	
Scenario 4 – MVC Transit with Growth Choices Land Use with MVC Roadway Alternative with Tolling Option						
Non-motorized	38,138	21,585	763,472	198,733	1,021,928	
Auto	1,581,184	132,144	5,742,664	3,743,627	11,199,619	–0.03%
Transit	86,068	38,735	48,619	25,192	198,614	1.8%
Total	1,705,390	192,464	6,554,755	3,967,552	12,420,161	
Scenario 5 – MVC Transit with Compact Growth Land Use with No Roadway Alternatives						
Non-motorized	38,615	21,572	777,287	202,930	1,040,404	
Auto	1,592,494	132,147	5,729,022	3,739,363	11,193,026	–0.09%
Transit	89,836	38,745	49,437	25,857	203,875	4.5%
Total	1,720,945	192,464	6,555,746	3,968,150	12,437,305	
Scenario 6 – MVC Transit with Compact Growth Land Use with MVC Roadway Alternative Non-tolled						
Non-Motorized	38,468	21,549	757,061	198,116	1,015,194	
Auto	1,580,018	132,435	5,748,617	3,743,942	11,205,012	0.02%
Transit	87,806	38,480	49,926	25,926	202,138	3.6%
Total	1,706,292	192,464	6,555,604	3,967,984	12,422,344	
Scenario 7 – MVC Transit with Compact Growth Land Use with MVC Roadway Alternative with Tolling Option						
Non-motorized	38,349	21,574	771,068	201,529	1,032,520	
Auto	1,580,166	132,208	5,735,292	3,740,707	11,188,373	0.1%
Transit	87,719	38,683	49,301	25,789	201,492	3.3%
Total	1,706,234	192,465	6,555,661	3,968,025	12,422,385	

The table shows daily regional trips within the WFRC and MAG planning area.

Shaded cells highlight the expected auto and transit trips under the various sequencing scenarios. The shaded percentages indicate the percentage increase in auto and transit trips compared to the No-Action scenario.

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Table 29.2-6 below provides the results for the number of transit trips, transit boardings, transit share, roadway VMT, and delay results in the MVC study area. This table shows that the most important factor in determining transit use is land use, not whether the MVC freeway (either tolled or non-tolled) is built first. This is demonstrated by the lower transit use in Scenarios 2, 3, and 4 compared to Scenarios 5, 6, and 7, all of which include a compact growth pattern with associated transit-oriented development concentrated along 5600 West.

With implementation of either the Growth Choices land use or a more compact development land use along 5600 West, there would be a substantial increase in daily transit trips compared to a scenario in which no transit line is constructed (an increase of between 9% and 38%). However, the transit-only scenarios resulted in substantially greater roadway delay (about 70% for the non-tolled roadway and 30% for the tolled roadway) compared to the scenarios in which the roadway and transit were operating at the same time in 2030.

Table 29.2-6. 2030 Sequencing Scenario Transit Trips, Transit Boardings, Transit Share, VMT, and Delay Results in the MVC Study Area

Evaluation Method	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7
2030 daily transit trips[a]	26,300	30,900	29,300	28,700	36,400	35,200	34,200
2030 daily transit boardings	800[b]	8,230[c]	7,160[c]	7,030[c]	12,310[c]	11,180[c]	10,930[c]
2030 peak-period transit share[a]	1.33%	1.54%	1.40%	1.41%	1.71%	1.59%	1.59%
2030 peak-hour transit share[a]	1.80%	2.09%	1.90%	1.91%	2.32%	2.16%	2.16%
2030 daily highway VMT in the MVC study area	13,731,000	13,680,000	16,584,000	15,135,000	13,553,000	16,402,000	15,010,000
2030 daily highway system hours of delay in the MVC study area	131,300	127,600	74,300	95,800	139,200	82,000	107,300

[a] Transit trips with one or both ends in the MVC study area

[b] 5600 West bus route

[c] 5600 West Transit Alternative with Dedicated Right-of-Way Transit Option

29.3 Conclusion

For the sequencing analysis, both qualitative and quantitative analyses were conducted. The qualitative analysis concluded that that the municipalities and developers felt that land-use decisions in general were not based on the timing of the MVC alternatives but instead were based on previously adopted land-use plans, political agendas, and the housing markets. Most of the municipal representatives interviewed stated that, if the transit alternative is constructed first, their municipality is likely to change the land uses around the transit line to commercial or industrial or higher-density residential (to increase transit ridership).

However, the representatives did not expect land uses to be changed throughout their entire municipality. In other words, if municipalities increase densities around the transit alternative and the transit-oriented development land uses are allowed to establish without competition from the MVC freeway alternative, the developable areas located away from the transit line will continue to develop as currently planned to support the anticipated growth in the area.

The quantitative analysis evaluated five sequencing scenarios for the MVC project in 2015 and seven sequencing scenarios for 2030, including the compact-growth scenario that the local governments considered and decided not to adopt during the Growth Choices process. This analysis demonstrated that there was little difference in regional daily transit use whether transit operated without an MVC roadway or whether transit operated with an MVC roadway in place in 2015 or in 2030. In most cases, there was little difference in daily transit trips between the transit-only scenarios and the scenarios in which transit operated with an MVC roadway. The transit-only scenarios resulted in substantially greater roadway delay compared to the roadway and transit operating at the same time in 2015 and in 2030.

The greatest factor that affected transit use was land-use densities, not whether the MVC freeway was operating with transit in 2015 or in 2030. As demonstrated by 2015 Scenario 2, when there was no transit-oriented land use concentrated along 5600 West, the amount of transit use was the lowest compared to the other 2015 action scenarios. In the 2030 scenarios, the transit use was also the highest when there was more compact land use along 5600 West. In summary, there would be little effect on transit use if the MVC freeway was operating at the same time as transit in 2015 or in 2030, but there would be a substantially greater amount of hours of highway system delay if transit is implemented without the MVC freeway.

29.4 References

Parsons Brinckerhoff

2005a Summaries of Municipal Interviews with Salt Lake County and Utah County Jurisdictions for Use in Secondary Land Use Impacts Analysis. February.

2005b Summaries of Developer Interviews for Use in Secondary Land Use Impacts Analysis. March.

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